frontiers in Water

TYPE Correction
PUBLISHED 01 July 2026
DOI 10.3389/frwa.2026.1888807

Check for updates

OPEN ACCESS

EDITED AND REVIEWED BY
Xiaofan Yang,
Beijing Normal University, China

*CORRESPONDENCE
Mikhail Tsypin
tsypin@gfz-potsdam.de

RECEIVED 22 May 2026
REVISED 22 May 2026
ACCEPTED 09 June 2026
PUBLISHED 01 July 2026

CITATION
Tsypin M, Cacace M, Guse B, Güntner A and Scheck-Wenderoth M (2026) Correction: Modeling the influence of climate on groundwater flow and heat regime in Brandenburg (Germany). *Front. Water* 8:1888807. doi: 10.3389/frwa.2026.1888807

COPYRIGHT
© 2026 Tsypin, Cacace, Guse, Güntner and Scheck-Wenderoth. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

Correction: Modeling the influence of climate on groundwater flow and heat regime in Brandenburg (Germany)

Mikhail Tsypin[1,2]*, Mauro Cacace[1], Björn Guse[1,3], Andreas Güntner[1,4] and Magdalena Scheck-Wenderoth[1,5]

[1]GFZ German Research Centre for Geosciences, Potsdam, Germany, [2]Institute of Applied Geosciences, Technische Universität Berlin, Berlin, Germany, [3]Department of Hydrology and Water Resources Management, Christian-Albrechts-University of Kiel, Kiel, Germany, [4]Institute of Environmental Sciences and Geography, University of Potsdam, Potsdam, Germany, [5]Faculty of Georesources and Materials Engineering, RWTH Aachen University, Aachen, Germany

KEYWORDS

groundwater modeling, climate, groundwater level, geothermal potential, groundwater recharge, mesoscale Hydrological Model (mHM), North German Basin, Brandenburg

A Correction on
Modeling the influence of climate on groundwater flow and heat regime in Brandenburg (Germany)

by Tsypin, M., Cacace, M., Guse, B., Güntner, A., and Scheck-Wenderoth, M. (2024). *Front. Water* 6:1353394. doi: 10.3389/frwa.2024.1353394

There was a mistake in Table 1 as published. An incorrect unit of heat capacity values was given in the table heading. Instead of "Specific heat capacity c [J/kg·K]", the referenced values correspond to "Volumetric heat capacity C [kJ/m^3·K]". The corrected Table 1 appears below.

There was a mistake in Figures 5 and 7 as published. Darcy flux values were expressed in m/month, while incorrectly labeled as m/s. In the corrected figures, Darcy flux values are expressed and labelled in m/s. The corrected Figures 5 and 7 appear below.

Accordingly, a correction has been made to the sentences in Section 3.1, in which modeled ranges of Darcy flux were quoted. A correction has been made to the Section **3 Results**, *3.1 Groundwater flow: the initial state*, Paragraph 3:

"Following the steeply dipping Buntsandstein, Darcy flux ranges between 1e-11–3e-10 m/s, and water can freely flow downward. As groundwater flow becomes dominated by a more lateral component, Darcy flux decreases to 1e-12–1e-11 m/s."

A correction has been made to the Section **3 Results**, *3.1 Groundwater flow: the initial state*, Paragraph 4:

"Darcy flux ranges from 2e-11 to 5e-9 m/s with highest flux in the permeable Jurassic and Cretaceous units."

A correction has been made to the Section **3 Results**, *3.1 Groundwater flow: the initial state*, Paragraph 5:

"Higher Darcy flux (3e-10–1e-8 m/s) and shorter travel distances lead to shorter groundwater residence times."

The original version of this article has been updated.

Generative AI statement

Any alternative text (alt text) provided alongside figures in this article has been generated by Frontiers with the support of artificial intelligence and reasonable efforts have been made to ensure accuracy, including review by the authors wherever possible. If you identify any issues, please contact us.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

TABLE 1 Petrophysical properties of the model units assigned in the numerical simulations.

Unit	Lithology	Thermal conductivity λ [W/(m*K)]	Porosity ϕ [%]	Radiogenic heat production Q_r [W/m^3]	Volumetric heat capacity C [kJ/m^3·K]	Bulk density ρ [kg/m^3]	Permeability k_{xy} [m^2]
Quaternary	Sand, silt, clay	1.5	23	7.0E-07	1,620	2,100	1.0E-13
Tertiary, post-Rupelian	Sand, silt, clay	1.5	23	7.0E-07	1,640	2,100	5.0E-14
Rupelian	Clay	1.0	20	4.5E-07	1,810	2,400	1.0E-16
Tertiary, pre-Rupelian	Sand, silt, clay	1.9	10	3.0E-07	1,700	2,100	1.0E-14
Upper Cretaceous	Limestone with marl	1.9	10	3.0E-07	2,290	2,215	1.0E-13
Lower Cretaceous	Marl with claystone	2.0	13	1.4E-06	2,290	2,215	1.0E-13
Jurassic	Claystone with silt- and sandstone	2.0	13	1.4E-06	2,250	2,450	1.0E-13
Keuper	Claystone with marl and gypsum	2.3	6.0	1.4E-06	2,320	2,530	1.0E-14
Muschelkalk	Limestone with marl	1.85	0.1	3.0E-07	2,250	2,530	1.0E-18
Buntsandstein	Sandstone, siltstone	2.0	4.0	1.0E-06	2,390	2,530	1.0E-14
Zechstein	Salt, gypsum, evaporite	3.5	~0	9.0E-08	1,940	2,150	1.0E-19
Pre-Salt	Compacted clastics, volcanics	2.5	~0	1.5E-06	2,600	2,600	1.0E-19
	Water	0.65			4,180	1,000	

Thermal conductivity, porosity, permeability, and radiogenic heat production values are taken from Noack et al. (2013), specific heat capacity estimates taken from Frick et al. (2019), bulk density values are taken from Frick et al. (2022) and Noack et al. (2013).

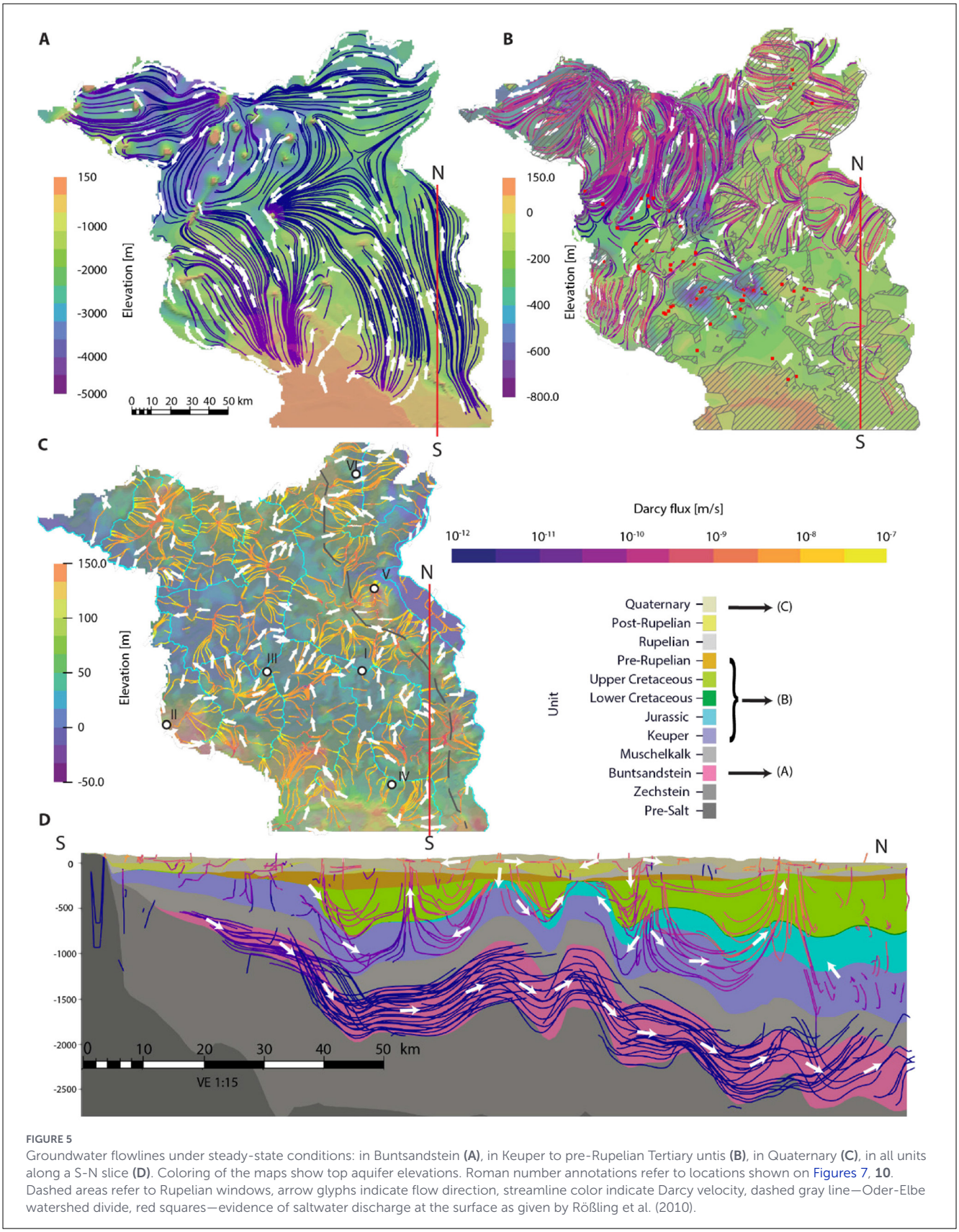

FIGURE 5
Groundwater flowlines under steady-state conditions: in Buntsandstein **(A)**, in Keuper to pre-Rupelian Tertiary untis **(B)**, in Quaternary **(C)**, in all units along a S-N slice **(D)**. Coloring of the maps show top aquifer elevations. Roman number annotations refer to locations shown on Figures 7, **10**. Dashed areas refer to Rupelian windows, arrow glyphs indicate flow direction, streamline color indicate Darcy velocity, dashed gray line—Oder-Elbe watershed divide, red squares—evidence of saltwater discharge at the surface as given by Rößling et al. (2010).

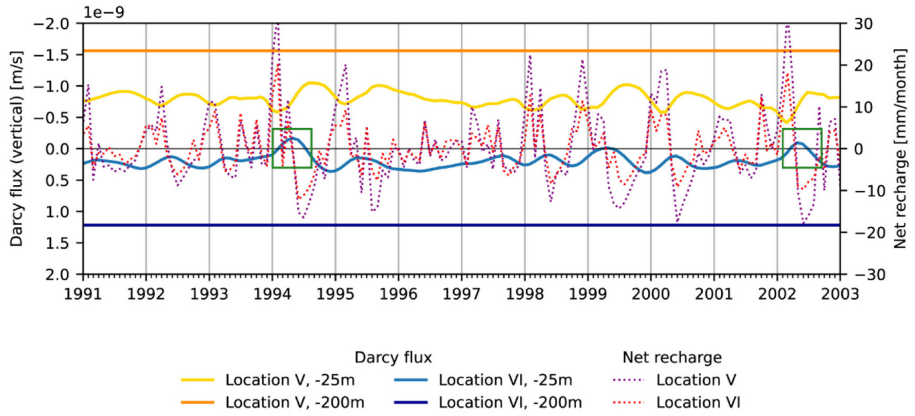

FIGURE 7
Time series of net recharge flux and simulated vertical Darcy flux at two locations, shown on Figure 5C. Location V is on top of a glacial plateau, while location VI is in a river valley. Positive net recharge flux corresponds to the gain of groundwater storage, negative Darcy flux corresponds to downward flow.